



COSTS AND PRODUCTIVITY IN
PUBLIC HIGHER EDUCATION

CONVENING SUMMARY

OCTOBER 15 & 16, 2015
UNIVERSITY OF WISCONSIN-MADISON

EXECUTIVE SUMMARY

What do colleges and universities need to spend to educate their students? Are there ways to educate postsecondary students – without reductions in quality – at costs measurably lower than those institutions now bear? What programs and practices represent the productive use of resources in support of college completion, for all students? These, and other related questions, permeate higher education policy discourse and weigh heavily on higher education institutions as they struggle to meet external performance targets for quality and efficiency. However, the answers to these questions are unclear, as are strategies that might be used to better understand college costs.

In October 2015, The Wisconsin HOPE Lab hosted a two-day convening on the “costs of college,” with the goal of bringing together national experts in higher education finance and policy to have a fruitful and creative conversation about how to reframe the discussion of higher education costs to incorporate a resource cost orientation. Invitees came from a variety of disciplinary backgrounds and professional positions, and were assembled as a whole, because we believe that the best strategy for moving forward is through an exchange among individuals with diverse backgrounds and perspectives.

The ensuing discussion, and debate, focused on the merits and challenges with moving toward a new perspective – one that is grounded in the actual resources used, or needed, by higher education institutions, and how these resources are linked to desired outcomes and performance targets. Such a resource orientation to understanding costs and productivity stands in contrast to existing approaches that primarily rely upon expenditure and revenue data taken from higher education institutions’ financial management systems and federal data sources.

Participants reviewed evidence on existing models for understanding higher education expenditures and discussed the important distinctions between higher education expenses and resources and costs. Researchers shared their work with using resource-based strategies for estimating higher education costs, both in K-12 and higher education settings. Practitioners described their experiences attempting to collect and use resource data to guide institutional decision making, and the limitations and merits of existing financial accounting systems in their work. Throughout the discussion, all participants worked toward developing a starting point for a new conceptual and empirical approach to understanding higher education costs – resource cost modeling – which has been widely used in K-12 education cost estimation, but has had limited applications in higher education.

After two days of discussions, participants reached the following conclusions about existing strategies for estimating higher education costs and necessary steps for future work:

1. Legislatures, systems, and institutions need better cost information. Without information on the cost of courses, academic programs, and support services, decision-makers cannot effectively evaluate the adequacy, efficiency, and fairness of existing investments in higher education.
2. The current emphasis on higher education prices is insufficient; instead, the conversation should also include discussions of resources, costs, and quality. Shifting the conversation from pricing toward the intersection between costs and quality will require new conceptual and empirical frameworks and data that support such analyses.
3. Resource-based cost estimation holds promise for better understanding higher education costs relative to observed and desired outcomes. More work is needed to understand and evaluate different approaches to applying resource-based cost estimation to higher education, and

future research is needed on how these strategies can be used to answer critical questions faced by policymakers and practitioners.

4. There may be political challenges with moving forward with resource-based approaches to estimating higher education costs. Some higher education institutions may be wary of how data on higher education resources might be used. Other institutions – particularly those that may be underfunded – may be keenly interested in resource-based cost estimation and related adequacy funding studies that estimate the costs of attaining successful academic outcomes for different types of students.

From this initial meeting, the HOPE Lab plans to commission a series of papers, authored by meeting participants, to serve as catalysts for discussion and debate in the field.

PARTICIPANTS:

- **Maria Anguiano**, Vice Chancellor for Planning and Budget, University of California, Riverside
- **Bruce Baker**, Professor, Rutgers University
- **Brooks Bowden**, Associate Director, Center for Benefit-Cost Studies of Education
- **Richard George**, CEO, Great Lakes Higher Education Guaranty Corporation
- **Sara Goldrick-Rab**, Professor, University of Wisconsin-Madison
- **Rick Kahlenberg**, Senior Fellow, The Century Foundation
- **Amy Kerwin**, Vice President, Great Lakes Higher Education Guaranty Corporation
- **Tammy Kolbe**, Assistant Professor, University of Vermont
- **Jesse Levin**, Principal Researcher, American Institutes for Research
- **Chris Morphew**, Executive Associate Dean for Research and Innovation, University of Iowa
- **Kevin Reilly**, President Emeritus, University of Wisconsin System
- **Jennifer Rice**, Professor, University of Maryland
- **Jed Richardson**, Managing Director, Wisconsin HOPE Lab
- **Kate Shaw**, Executive Director, Research for Action
- **Matthew Soldner**, Senior Researcher, American Institutes for Research
- **Scott Thomas**, Professor and Dean, Claremont Graduate University

INTRODUCTION

What do colleges and universities need to spend to educate their students? Are there ways to educate postsecondary students – without reductions in quality – at costs measurably lower than those institutions now bear? What programs and practices represent the productive use of resources in support of college completion, for all students? These, and other related questions, permeate higher education policy discourse and weigh heavily on higher education institutions as they struggle to meet external performance targets for quality and efficiency. However, the answers to these questions are unclear, as are strategies that might be used to better understand college costs.

In October 2015, The Wisconsin HOPE Lab hosted a two-day convening on the “costs of college,” with the goal of bringing together national experts in higher education finance and policy to have a fruitful and creative conversation about how to reframe the discussion of higher education costs to incorporate a resource cost orientation. Specifically, meeting participants were asked to engage in a process where they:

1. Built a common understanding of the key policy questions related to higher education costs and the productivity of investments in higher education.
2. Evaluated data sources and methodologies to answer key policy questions, with an emphasis on identifying gaps in existing data infrastructure and weaknesses with dominant approaches to estimating higher education costs.
3. Considered a resource orientation to estimating higher education costs and productivity, and the practical applications for such approaches.

In the following sections of this report, we summarize the group’s discussions during the event. The summary is organized according to several key themes: 1) considerations for using resource cost modeling in higher education; 2) applying resource cost models to understanding differences in costs associated with student pathways; and 3) using resource cost modeling to develop better estimates of college costs and funding adequacy. Our summary concludes with an overview of the conclusions and next steps identified by convening participants.

CONSIDERATIONS FOR RESOURCE COST MODELING IN HIGHER EDUCATION

Currently, information on college costs is limited to the dollars institutions spend on programs. While this is important information, it is insufficient for answering questions of equity and efficiency. To answer those questions, researchers and policy makers need much-improved higher education cost models. In K-12, resource cost modeling is an accepted and useful method of determining the true costs of education activities. With very few exceptions, resource cost modeling has not yet been applied to higher education, in large part due to the many challenges to implementing it successfully given the complexities of the higher education landscape. Chris Morphew of the University of Iowa pointed out that higher education functions more as a market than K-12 and that price is disconnected from costs. Jesse Levin of the American Institutes for Research explained that different mixes of courses have different costs associated with them, which does not exist in K-12. Allocations of dollars vary greatly across institutions, said Kate Shaw of Research for Action. Chris Morphew emphasized this point, noting large variances in costs within an education program, such as science education and social studies

education. Kevin Reilly of the University of Wisconsin System remarked on the interconnectedness of public systems, wondering whether reallocation away from flagships might damage the entire system.

Jennifer Rice of the University of Maryland presented on the difference between resource cost data and expenditures and the challenges of creating rigorous cost models. Typically, people think about college costs in terms of expenditure, either funding, such as tuition and federal and state allocations, or in terms of per-student student expenses, such as tuition and fees, room and board, books, and supplies. Expenditures are useful for answering many important questions. They can help explain trends in college tuition, who is shouldering the greatest burden of college costs, and whether overall costs are increasing. However, expenditures are a “black box” that obscures how dollars are being used and who is benefiting from those dollars. Better cost models are necessary to answer questions, such as: How are dollars being used and who is benefiting from those dollars? What do “cheap” versus “expensive” models of higher education look like? Are expensive models worth it? Are different degrees associated with different costs? What are the different resource consumption patterns of different types of students? What are the common pathways through higher education and what do they cost?

Resource cost modeling is a bottom-up approach that focuses on resources, both monetary and non-monetary, required to meet specific goals. For example, a resource cost approach to successful course completion would account for the type of instructor, how many hours that instructor spends preparing and teaching, any student support services, such as tutoring, necessary to help students complete the course, and necessary administration (e.g. registrar, financial aid, etc.) and infrastructure (e.g. facilities). This approach enables comparisons of resource requirements across different models of higher education, and allows analyses of cost-effectiveness and efficiency, equity and adequacy.

Resource cost analyses have proven useful in K-12 but are challenging to implement. They require identification of the quantity and quality of both objects (e.g. faculty time) and their functions (e.g. research or instruction). Functions can be complex to identify because single objects often have multiple functions. Student support services, for example, function in multiple academic programs and may be used in greater quantity by students with less academic preparation. Finally, assigning monetary value to resources, such as a classroom or a library, also can be challenging.

Rick Kahlenberg of the Century Foundation asked for examples of high-quality resource cost modeling. Jennifer Rice cited both Hank Levin’s Center for Benefit-Cost Studies in Education, as well as Jesse Levin’s and Jay Chambers’ work. High quality resource cost analyses:

- make clear and meticulous assumptions with a range of reasonable estimates based on different, reasonable assumptions.
- are clear about decision rules, which can be highly consequential to final estimates and must be consistent across analyses.
- keep the audience in mind. Decision rules should speak to audience concerns.
- keep the goals of the education enterprise at the forefront of the analysis. Different types of institutions have different goals that give rise to legitimate differences in costs. For example, colleges focused on access and universities with dual goals of education and research have different goals that may lead to legitimate differences in costs. Likewise, differences in degree programs and student preparation may result in very different, yet legitimate, costs across institutions.
- don’t determine models based on data availability. Resource cost analyses can quickly become intensive data collections.

Following Jennifer Rice's presentation, a discussion ensued regarding the ultimate goals of resource cost analysis, in particular, cost-benefit analysis of educational programs and interventions. To do so, Tammy Kolbe of the University of Vermont pointed out, requires both costs and outcomes. If researchers want to go beyond just cost estimates, they need to agree on outcomes and how to measure them. Kate Shaw asserted the need for interim measures in higher education. Although the ultimate goal of higher education is completion or workforce success, those outcomes take too long to measure for evaluators who want to provide timely feedback for improvement of current programs. Brooks Bowden of the Center for Benefit-Cost Studies in Education offered both number of credits earned and probability of persistence as proximal outcomes. Both Maria Anguiano of the University of California, Riverside and Chris Mophew suggested value-added measures of outcomes, comparing observed outcomes to predicted outcomes based on pre-college measures such as high school GPA or SAT scores.

Considering the audience for cost information is also important, pointed out Maria Anguiano. Kate Shaw agreed, noting that state legislators are accustomed to looking at cost data from K-12. When they lack that information for higher education, they question whether appropriations requests are really necessary. More specificity is necessary to convince them. Jesse Levin pointed to two camps in higher education. The first camp consists of those who believe that there is already enough money, which colleges need to use more efficiently. The other camp believes that current resources are being used as efficiently as possible but that those resources are insufficient. To speak to both those camps, researchers need to define the goal, an adequate education, and provide accurate information on the true costs of education for different types of students.

RESOURCE COST MODELING: CONSIDERATIONS FOR IDENTIFYING PATHWAYS

Chris Mophew, Bruce Baker of Rutgers University, and Scott Thomas of Claremont Graduate University spoke on identifying pathways in resource cost modeling. Bruce Baker began by explaining that institutions classify expenditures into organizational units. While this makes sense from an accounting perspective, it obscures costs associated with educational outcomes, because students consume resources across organizational units. It is preferable to look at resources accessed by students toward outcomes. The challenge is that students take many pathways toward the same outcome. Those pathways may differ by student background, institutional type, program and offering units, and instructional delivery mode.

Pathways consist of sequences of courses that result in a specific outcome, typically completion. Researchers can estimate course costs and then aggregate those costs to various pathways. Course costs are comprised of direct and indirect costs. Direct costs vary by course, and include teacher and support staff compensation, supplies and equipment, and student support services compensation, all of which must be pro-rated by the number of students consuming those resources. Indirect costs include administrative overhead, facilities operating overhead such as maintenance and utility costs, and facilities capital overhead such as the amortized expense or lease equivalent of space. Put simply, costs are a mix of people, space, stuff, and time.

Data requirements pose a substantial challenge to identifying and costing pathways. Researchers require transcript data and course enrollment data. In addition, it is necessary to have instructors linked

to all courses. Researchers must also know whether courses are taught by faculty or adjuncts, whether courses use teaching assistants, and whether the class is online, traditional, or a hybrid. Going further, ideally there is available data on students' use of support services and their residential life experiences.

Scott Thomas followed with an example of how researchers might identify pathways. Although institutions have preferred sequences of courses that provide the shortest route between enrollment and graduation, few students actually follow those paths. Students pursue many alternate pathways, which is why researchers need tools to select the most common. Network analysis is one such tool. In network analysis, people are connected by personal ties or events they have in common. For higher education pathways, courses are those common events. All students have their own networks of courses. If many students have similar networks, then that pattern is called a pathway.

Following this presentation, participants discussed potential critiques of resource cost models and their use. Chris Morphew began by stating that the weakness of the approach is that current resource consumption is not a function of institutions' attempts to distribute those resources efficiently. In that way, resource cost estimates cannot say anything about the proper use of resources. Bruce Baker pointed to resource cost studies as first steps necessary, but not sufficient, for analyzing the effectiveness of different approaches. Rick Kahlenberg described a framework that presents an efficient pathway and encourages schools to move toward it. Chris Morphew described a similar framework that defines a baseline inefficiency rate and incentivizes schools to move below it.

Kate Shaw returned to an earlier topic by asking participants to keep in mind the practical utility of different approaches. The most accurate model is not necessarily the one that is most defensible and easiest to explain. Lay audiences, including legislators, will be less concerned about methodological nuance than understanding how researchers arrive at their estimates.

Finally, participants agreed that one of the most significant challenges to resource cost models is that in many cases institutions prefer not to understand their costs and will be unwilling to offer data or employee perspectives that are necessary for quality cost models. Maria Anguiano pointed out that administrators want to know that the information will not be used against their institutions. Scott Thomas concurred that the threat from this work is real. He has had his work blocked for these reasons. He suggests working on the system or state levels to reduce perceived institutional vulnerability.

APPLYING RESOURCE COST MODELS

Following the sessions on implementing resource cost models, participants considered how to begin applying these models to pressing questions in higher education. Jesse Levin suggested turning to administrators and legislators for these questions. The administrators in the room had several ideas. Chris Morphew indicated that the University of Iowa wants to know more about the costs of helping likely dropouts graduate. Maria Anguiano agreed that UC Riverside is also interested in funding adequacy and how systems might allocate resources equitably across institutions.

Jesse Levin noted that an adequacy study involves costing out a comprehensive program, which could be challenged, and suggested defining a simple outcome and program that researchers could cost out. Participants discussed several interesting programs that could be worthwhile opportunities for a

resource cost study. In contrast, Kate Shaw argued that postsecondary institutions' primary goal is to ensure that more students graduate. Levin agreed that the premium necessary for helping different types of students to graduate is interesting.

Tammy Kolbe wondered whether studies of premia should compare two alternatives or focus on trying to understand resource costs. For comparing alternatives, researchers must consider endogeneity issues when institutions undergo multiple, simultaneous changes. Adequacy studies, however, would not require a counterfactual. Matt Soldner of the American Institutes for Research added that simply determining costs would be a significant step forward. Tammy Kolbe then suggested a non-controversial cost study that would allow researchers to focus on operational details.

DATA SOURCES FOR RESOURCE COST MODELS: STRENGTHS AND WEAKNESSES

One of the primary challenges of resource cost modeling is that there are few existing data sources. Typically, universities collect data for accounting and compliance purposes, which omit important resource data and are often too highly aggregated. There are, however, several existing and developing data sets that can be useful to resource cost modelers.

Matt Soldner began the discussion by describing the most well-known expenditures data, the Integrated Postsecondary Education Data System (IPEDS). The IPEDS Finance Survey is a statement of each institution's audited financial statements. IPEDS also surveys institutions on faculty numbers and salaries, disaggregated by the type of faculty. There is a similar survey for other institutional staff. These IPEDS data are very useful but cannot be disaggregated by program or student types. The primary strengths of IPEDS, Tammy Kolbe noted, are that it covers all institutions, recurs annually, and is federally funded. In addition, technical review panels regularly consider changes to the surveys.

Several data sources are available to inform pathways work. The National Center for Education Statistics collects complete transcript data for both the Baccalaureate and Beyond Longitudinal Study and for the Beginning Postsecondary Students Longitudinal Study. Sara Goldrick-Rab of the University of Wisconsin mentioned that RTI International also has built a system for transcript data, coded at the course level and including several course attributes. Matt Soldner described the Predictive Analytics Reporting (PAR) Framework, a non-profit that was originated through the Gates Foundation but now operates independently. PAR collects student-level and course-level data, including transcripts, from member institutions. PAR standardizes and de-identifies that data and shares it across member institutions for analysis. PAR currently includes 350 campuses and is actively recruiting entire systems to bolster their database.

The University of California, Riverside has recently begun a project called Activity Based Costing (ABC) to create a decision support management tool for institutions to understand how expenditures are related to faculty and staff functions. The ultimate goal of the ABC project is to improve student success by providing administration with the information necessary to optimize courses and course portfolios. As a result, Riverside will have measures of the relative costs of individual courses, as well as related functions such as tutoring, course development, and grading. ABC's process for estimating course costs uses a set of predetermined decision rules to allocate direct cost activities into categories using data on students, courses, payroll, and facilities. Faculty time is the only direct cost that is not always allocated.

In an alternative model, Riverside has used faculty surveys to categorize instructional and non-instructional hours. Finally, indirect costs are allocated into activities based on another set of decision rules. Using the course-level costs that result from this process, Riverside can aggregate costs into departments, majors, or any other academic program of interest.

CONCLUSIONS AND NEXT STEPS

After two days of discussions, participants came to several conclusions about the current state of accurate models of college costs and concrete steps for how researchers can advance the field to provide timely, accurate information to administrators and legislators regarding the adequacy, efficiency, and equity of current allocations:

1. Legislatures, systems, and institutions need better cost information. Without information on the cost of courses, academic programs, and support services, decision-makers cannot engage in the type of cost-benefit analysis that is essential for determining the most efficient allocation of higher education resources, nor can they determine whether current allocations are adequate for producing desired student outcomes.
2. Shifting the conversation away from prices and toward actual costs of adequacy will require new data and new, common terminology.

Resource cost studies must overcome significant political challenges from those who are wary of how these data will be used. Many institutions, however, particularly those that may be underfunded, are interested in adequacy studies that estimate the costs of attaining successful academic outcomes for different types of students.



ABOUT THE WISCONSIN HOPE LAB

The Wisconsin HOPE Lab was established in 2013 on the University of Wisconsin-Madison campus to engage in translational research aimed at improving equitable outcomes in postsecondary education by making college more affordable. Our goal is to help policymakers and practitioners (a) accurately state the costs of attending college, (b) ensure that families and students understand these costs, and (c) find effective ways to cover these costs that enhance degree completion rates as well as the personal and societal benefits of postsecondary education. For more information, see www.wihopelab.com.